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Aboriginal Street-involved Youth Experience Elevated Risk of Incarceration

Brittany Barker, MPP^{1,2}, Gerald Taiaiake Alfred, PhD³, Kim Fleming, MSW¹, Paul Nguyen, PhD¹, Evan Wood, MD, PhD^{1,4}, Thomas Kerr, PhD^{1,4}, and Kora DeBeck, PhD^{1,5}

¹Urban Health Research Initiative, British Columbia Centre for Excellence in HIV/AIDS

²Interdisciplinary Studies Graduate Program, University of British Columbia

³Indigenous Governance Program, University of Victoria

⁴Division of AIDS, Department of Medicine, University of British Columbia

⁵School of Public Policy, Simon Fraser University

Abstract

Objectives—Past research has identified risk factors associated with incarceration among adult Aboriginal populations; however, less is known about incarceration among street-involved Aboriginal youth. Therefore, we undertook this study to longitudinally investigate recent reports of incarceration among a prospective cohort of street-involved youth in Vancouver, Canada.

Study Design—Prospective cohort study.

Methods—Data were collected from a cohort of street-involved, drug-using youth from September 2005 to May 2013. Multivariate generalized estimating equation analyses were employed to examine the potential relationship between Aboriginal ancestry and recent incarceration.

Results—Among our sample of 1050 youth, 248 (24%) reported being of aboriginal ancestry, and 378 (36%) reported being incarcerated in the previous six months at some point during the study period. In multivariate analysis controlling for a range of potential confounders including drug use patterns and other risk factors, Aboriginal ancestry remained significantly associated with recent incarceration (adjusted odds ratio [AOR]=1.44; 95% confidence interval [CI]: 1.12–1.86).

Send correspondence to: Kora DeBeck, PhD, Research Scientist, Urban Health Research Initiative, B.C. Centre for Excellence in HIV/AIDS, St. Paul's Hospital, 608-1081 Burrard Street, Vancouver, B.C., V6Z 1Y6, Canada, Tel: [604] 682-2344 ext 66784, Fax: [604] 806-9044, uhri-kd@cfcnet.ubc.ca.

Contributions: The specific contributions of each author are as follows: BB, KD, TK and EW designed the study and wrote the protocol with extensive consultations with GTA and KF; BB managed the literature searches and BB and KD prepared the first draft of the analysis, which was revised by GTA, TK, EW and KF; PN conducted the statistical analyses with input from BB and KD; all authors contributed to the main content and provided critical comments on the final draft. All authors approved the final manuscript.

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Conclusions—Even after adjusting for drug use patterns and other risk factors associated with incarceration, this study found that Aboriginal street-involved youth were still significantly more likely to be incarcerated than their non-Aboriginal peers. Given the established harms associated with incarceration these findings underscore the pressing need for systematic reform including culturally appropriate interventions to prevent Aboriginal youth from becoming involved with the criminal justice system.

Keywords

Aboriginal peoples; incarceration; street-involved youth; substance use; policing; discrimination

Introduction

The social and health-related harms associated with incarceration are well documented and include elevated rates of communicable disease and chronic illness^{1–4}; diminished mental health^{4–7}; long-term housing instability^{7,8}; barriers to employment^{6,8,9}; and both poor social integration and breakdown of interpersonal relationships.^{1,8} The negative impacts of incarceration are often more profound for young offenders, as evidence suggests incarcerated youth are more likely to be victimized, suffer developmental and cognitive delays, and exhibit physical and mental health issues, including suicidal ideation and attempts.¹⁰ It has also been shown that youth are more susceptible to peer pressure and do not have the same level of self-regulation and risk perception that adults exhibit.^{11–13} Despite the known harms of incarceration, previous studies have found that high juvenile incarceration rates did not foster future deterrence in criminal activity or an overall reduction in crime rates.^{10,14,15} Quite conversely, incarceration has been found to promote and reinforce risk-taking and delinquent behaviours,^{10,14,15} suggesting that incarcerating young people is a problematic policy approach from both a health and social perspective.

Another concerning aspect of incarceration is the overrepresentation of ethnic minorities at all stages of the criminal justice system (e.g., investigation, remand, custody) across western nations^{1,16–18} Canada shares with the United States, New Zealand and Australia, a long history of high incarceration rates among Aboriginal¹ populations.^{16,17,19–21} Specifically, in Australia, the proportion of Aboriginal people in the prison population is reported to be as high as 28% despite Aboriginal people accounting for approximately 3% of the total population.¹⁹ Similarly, in Canada, Aboriginal peoples comprise approximately 4% of the general population and 23–27% of inmates in federal and provincial correctional facilities,^{22,23} and there is evidence to suggest that this number has been on the rise since the early 2000s.¹⁶ This high number translates into Aboriginal adults being incarcerated at rates ten times higher than non-Aboriginal populations. While numerous studies contend that Aboriginal adults are overrepresented in criminal justice systems, there is limited empirical evidence that investigates whether this overrepresentation is similar among Aboriginal

¹Aboriginal in this context refers to all status and non-status “Indians” or First Nations, Inuit, and Métis peoples. However, it is important to note that the term ‘Aboriginal’ homogenizes the diversity in terms of distinct communities or tribes, history, language and culture within the pan Aboriginal populations and that some scholars have found the word colonial and harmful⁵⁵ - and First Nations inmates represent over 70% of the total Aboriginal incarcerated population, so the majority of injustices spoken to in this paper, fall disproportionately on First Nations youth and communities.²³

youth. A prior study examined the prevalence and correlates of incarceration among street-involved youth in our study setting (At-Risk Youth Study or ARYS),²⁴ but similarly, it did not investigate the influence of Aboriginal ancestry on recent reports of incarceration. Likewise, previous research concerning Aboriginal involvement in the criminal justice system has focused on what characteristics and risk factors are associated with incarceration,^{16,17,20,21–23} not assessing whether this association persists despite controlling for them. To the best of our knowledge, this is the first longitudinal study to assess whether Aboriginal youth experienced an elevated risk of incarceration among an already high-risk population of street-involved youth, while controlling for drug use practices and engagement in other illicit activities.

Methods

Data for these analyses were collected between September 2005 and May 2013, through the At-Risk Youth Study (ARYS), which has been previously described in detail elsewhere.²⁵ In brief, youth were eligible if they were: between the ages of 14–26 at time of enrolment; street-involved, defined as experiencing homelessness or being unstably housed (e.g., couch surfing, living in a SRO or shelter), or accessing street-based services (e.g., drop-in centres, street nurses) within the last year; had used illicit “hard” drugs in the past 30 days (e.g., crack, cocaine, heroin, or crystal methamphetamine); and provided written informed consent. At baseline and semi-annually, study participants complete an interviewer-administered questionnaire, which elicits a range of information, including items on sociodemographic information, drug use patterns, sexual and drug-related risk behaviors, engagement with health and social services, and involvement in the criminal justice system. At each study visit, participants receive a \$30 CAD monetary compensation and the research ethics board of the University of British Columbia has approved the study.

Our primary outcome of interest was recently being incarcerated, defined as having spent a night in detention, prison or jail in the last six months. The comparison group was those who reported not being incarcerated in the last six months. Our primary independent variable of interest was Aboriginal ancestry (self-identified as First Nations, Inuit, Métis vs. other).

First, to adjust for variables that are known, or, hypothesized to be associated with both incarceration and Aboriginal ancestry, we examined a wide range of potential confounders. Sociodemographic factors included: age at baseline (per year older); gender (male vs. female); high school incompleteness (yes vs. no); living in the Downtown Eastside (DTES) in the last six months, which is considered Vancouver’s drug use epicenter (yes vs. no); homelessness, defined as having no fixed address, sleeping on the street, couch surfing, or staying in a shelter or hostel in the last six months (yes vs. no); and having been in foster care, defined as living in an orphanage, foster home, group home, or being in the government custody as a child (yes vs. no). Behavioural and drug use variables, based on activities in the last six months, were treated as time-updated covariates on the basis of semiannual follow-up data and included: injection drug use (yes vs. no); non-fatal overdose, self-defined as having an adverse reaction as a result of consuming too much of a drug (yes vs. no); any injection or non-injection heroin use (yes vs. no); any injection or non-injection cocaine use (yes vs. no); any crack cocaine smoking (yes vs. no); any injection or non-

injection crystal methamphetamine use (yes vs. no); binge drug use, defined as using injection or non-injection drugs more frequently than usual (yes vs. no); heavy alcohol consumption, defined for females as four drinks in one day in the last week or seven drinks containing alcohol per week and for males as five drinks in one day in the last week or fourteen drinks containing alcohol per week (yes vs. no); engaging in sex work, defined as exchanging sex for money, shelter, drugs or other commodities (yes vs. no); and participation in drug dealing (yes vs. no). Other factors examined included: having ever been a victim of sexual abuse (yes vs. no); having ever been a victim of physical abuse (yes vs. no); and recently experiencing an act of violence, defined as being attacked, assaulted, or suffering violence in the previous six months (yes vs. no).

Initially, we examined the descriptive characteristics, stratified by reports of recent incarceration at the first study visit. Specifically, characteristics for participants who had been incarcerated were measured at their first visit (during the study period) that involved a report of being incarcerated, while characteristics for all other participants were measured from the first study visit during the study period. We assessed the associations with recent incarceration using the Pearson's χ^2 -test for categorical variables and the Mann-Whitney test for continuous variables.

As a next step, we used GEE analysis with a logit link function to assess the independent effect of incarceration and Aboriginal ancestry. The GEE methods provided standard errors adjusted by multiple observations per person using an exchangeable correlation structure.^{26,27} Our GEE analysis included an all-available-pairs procedure in order to account for individuals lost to follow-up or whose follow-up was intermittent. This method has been previously shown to account for missing data in GEE analyses while ensuring that bias remains negligible.²⁸ To fit the multivariate confounding model, we employed a conservative variable selection approach.²⁸ Specifically, we included all secondary variables (where $p < 0.10$ in bivariate analyses) in a multivariate model and used a stepwise approach to fit a series of reduced models. After comparing the value of the coefficient associated with the main independent variable of interest (Aboriginal ancestry) in the full model to the value of the coefficient in each of the reduced models, we dropped the secondary variable associated with the smallest relative change. We continued this iterative process until the minimum change exceeded 5%. Remaining variables were considered confounders in multivariate analysis. Several authors have previously used this technique successfully.^{29–31} All statistical analyses were performed using SAS software version 9.3 (SAS, Cary, NC). All p -values are two-sided.

Results

In total, 1050 street-involved youth were interviewed during the study period, including 718 (68%) males and 248 (24%) Aboriginal participants, with a median age at baseline of 21 (Interquartile Range [IQR]: 19–23). This sample contributed to 3,744 observations and a median number of three study visits (IQR: 1–5). Over the study period, 378 (36%) participants reported being incarcerated at least once. Characteristics of the study sample, stratified by recent reports of incarceration, are presented in Table 1.

The results of the bivariate and multivariate GEE analyses are shown in Table 2. In the bivariate analyses, Aboriginal ancestry (odds ratio [OR]=1.27; 95% confidence interval [CI]: 1.00–1.62) was positively associated with recent incarceration. In the multivariate analysis, Aboriginal ancestry (adjusted odds ratio [AOR]=1.40; 95% CI: 1.09–1.80) remained significantly and positively associated with recent incarceration after adjusting for the following identified confounders: male gender, not completing high school, homelessness, heroin use, crack cocaine use, and drug dealing.

Discussion

In the present longitudinal study based on data from nearly eight years of observations, Aboriginal ancestry remained positively and significantly associated with incarceration despite adjustment for numerous potential confounders including gender, homelessness, drug use practices, and drug dealing. These data provide compelling evidence that the elevated risk of incarceration among Aboriginal street-involved youth is not solely due to their complex risk and need profile.

A gamut of studies has identified the disproportionate number of Aboriginal individuals involved with criminal justice systems across western nations, as both offenders^{16,17,19–21} and victims.^{32–34} Two plausible scenarios present themselves: one, that Aboriginal peoples are committing a disproportionate number of crimes, or two, they are subjected to a discriminatory criminal justice system. Research indicates that people of Aboriginal ancestry are engaging in criminal activity at a higher rate than non-Aboriginal people,^{34,37} however, there are key underlying structural factors that are known to contribute to this observation. Specifically, previous research has identified numerous risk factors that disproportionately affect Aboriginal communities and are associated with an elevated risk of offending. These include residential instability, low levels of education, high levels of unemployment, alcohol and substance use issues, poverty, and severe family conflict.^{36,38} However, in the current study, even after adjusting for many of these risk factors, Aboriginal ancestry remained independently associated with incarceration, suggesting that policing practices or other aspects of the current criminal justice system may be partly responsible.

The importance of social, structural and environmental factors in producing health inequities is becoming increasingly well recognized in the field of public health and policy.^{39–41} In the context of the overrepresentation of Aboriginal youth in the criminal justice system, key relevant structural factors include the legacy of colonization and multi-century long, state-sponsored oppression. From the expropriation of land³⁷, prohibition of language and cultural practices⁴², forcible removal of Aboriginal children into Church-run residential schools in the late 1800s onwards,^{43,44} to the unaddressed intergenerational trauma^{38,44}, continued economic marginalization,^{36,38,44} and elevated rates of substance use and poverty today,^{19,36,38} a myriad of factors contribute as underlying determinants of Aboriginal overrepresentation in prison populations. Indeed, an abundance of research has identified that Aboriginal peoples continue to experience marginalization and discrimination at much higher rates than non-Aboriginal peoples,^{36,45,46} which appears to be consistent with our study findings.

For centuries, the Canadian police force has been charged with moving various culturally assimilative and destructive policies into action, yielding a long history of distrust and contempt.^{47,48} Today, Canadian police officers are accorded substantial discretionary power in how best to maintain peace and order on the street and research suggests that the viewpoint that Aboriginal peoples are criminal, violent or dangerous is prevalent among, at least, a minority of officers.^{48,49} Further, prior research has found that Aboriginal young people are more likely to be dealt punitive punishments (e.g., arrested and charged) rather than warnings compared to non-Aboriginal youth.⁵⁰ These factors may contribute to why Aboriginal youth in our study experienced increase contact with the criminal justice system independent of drug use patterns and other relevant practices.

Promising evidence suggests that alternative sentencing and diversionary community-based measures may be an effective way to both, prevent juvenile offenders from becoming repeat offenders while also protecting public order and safety.^{10,51} However, changing sentencing schemes or employing diversionary measures does not adequately address the underlying marginalization and discrimination that Aboriginal youth experience. This indicates that interventions on numerous fronts are required. Community policing practices have previously been demonstrated to bring tailored law enforcement strategies to meet the unique needs of the communities they serve and foster a shared sense of responsibility for community development and public order.⁵² These programs are developed in partnership with local public and non-profit agencies and community residents to ensure local applicability. There is an under-explored potential for community policing units to work harmoniously with First Nations and urban Aboriginal organizations to better understand the role of risk factors and the social determinants of incarceration with regard to Aboriginal youth. Additionally, given historical and ongoing systematic marginalization of Aboriginal peoples, solutions will need to be sought from outside traditional structures and processes. In particular, prior research has identified community-based alternative measures, designed and operated by self-governing Aboriginal nations to mitigate the post-colonial framework that the current criminal justice system exists within as a fundamental tenet to reform.^{38,50} Furthermore, Aboriginal communities have identified the need for upstream interventions to help at-risk Aboriginal youth connect with their communities, traditions and promote positive self-worth.^{53,54} In particular, as youth in our study often engage in problematic substance use, calls have been made for the implementation of culturally tailored addiction prevention programs that target Aboriginal youth (as both have a known association with incarceration), and programs that promote healthy family dynamics and conflict resolution.³⁶ Actions on multiple fronts that help address the economic and social discrimination of Aboriginal youth may help this high-risk population avoid becoming entrenched in the criminal justice system, as well as mitigate the subsequent negative health impacts.

This study has several limitations. First, as with all community-recruited research cohorts, the ARYS cohort is not a random sample and therefore may not generalize to other populations of street youth. Second, data were collected using self-reported interviews and is thus vulnerable to response biases. Given the sensitive nature of some interview questions, respondents may be inclined to report socially desirable responses leading to underreporting of stigmatizing behaviours such as illicit drug use and incarceration. Further, given the non-

randomized nature of this study, the relationships studied may be influenced by confounders not measured.

Conclusion

To our knowledge, this is the first study to examine the risk of incarceration among Aboriginal street-involved youth after controlling for drug use patterns and other risk behaviors. Even among a population at high-risk for incarceration and adjusting for known factors associated with incarceration, we found that Aboriginal street-involved youth are still more likely to experience involvement with the criminal justice system than their non-Aboriginal peers. Given the demonstrated inability of youth incarceration to prevent future deterrence or ameliorate the continued overrepresentation of Aboriginal people involved with the criminal justice system, and the harms associated with incarceration, evidence-based and culturally appropriate interventions are urgently needed to prevent more youth from becoming involved in the criminal justice system.

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References

1. Wakefield S, Uggen C. Incarceration and stratification. *Annual Review of Sociology*. 2010; 36(1): 387–406.
2. Milloy MJ, Wood E, Small W, et al. Incarceration experiences in a cohort of active injection drug users. *Drug and Alcohol Review*. 2008; 27(6):693–699. [PubMed: 19378451]
3. Stewart L, Henderson C, Hobbs M, Ridout S, Knuiman M. Risk of death in prisoners after release from jail. *Australian and New Zealand Journal of Public Health*. 2004; 28(1):32–36. [PubMed: 15108744]
4. Schnittker J, John A. Enduring Stigma: The long-term effects of incarceration on health. *Journal of Health and Social Behavior*. 2007; 48(2):115–30. [PubMed: 17583269]
5. Harner HM, Riley S. The impact of incarceration on women's mental health: responses from women in a maximum-security prison. *Qualitative health research*. 2013; 23(1):26–42. [PubMed: 23034774]
6. Wildeman C, Western B. Incarceration in fragile families. *The Future of Children*. 2010; 20(2):157–77. [PubMed: 20964136]
7. Greenberg G, Rosenheck R. Jail incarceration, homelessness, and mental health: a national study. *Psychiatric Services*. 2008; 59(2):170–7. [PubMed: 18245159]
8. Freudenberg N, Daniels J, Crum M, Perkins T, Richie BE. Coming home from jail: the social and health consequences of community reentry for women, male adolescents, and their families and communities. *American Journal of Public Health*. 2005; 95(10):1725–36. [PubMed: 16186451]

9. Pager D. The mark of a criminal record. *American Journal of Sociology*. 2003; 108(5):937–75.
10. Lambie I, Randell I. The impact of incarceration on juvenile offenders. *Clinical Psychology Review*. 2013; 33(3):448–59. [PubMed: 23454219]
11. Steinberg L, Scott ES. Less guilty by reason of adolescence: developmental immaturity, Diminished Responsibility, and the Juvenile Death Penalty. *American Psychologist*. 2003; 58(12): 1009–18. [PubMed: 14664689]
12. Steinberg L, Chung HL, Little M. Reentry of Young Offenders from the Justice System: A Developmental Perspective. *Youth Violence and Juvenile Justice*. 2004; 2(1):21–38. [PubMed: 20119512]
13. Steinberg L. A social neuroscience perspective on adolescent risk-taking. *Developmental Review*. 2008; 28(1):78–106. [PubMed: 18509515]
14. Stahlkopf C, Males M, Macallair D. Testing Incapacitation Theory: Youth Crime and Incarceration in California. *Crime & Delinquency*. 2010; 56(2):253–68.
15. Dawkins M, Sorensen JR. The Impact of Residential Placement on Aggregate Delinquency: A State-Level Panel Study, 1997–2011. *Criminal Justice Policy Review*. 2014:1–16.
16. Roberts J, Melchers R. The Incarceration of Aboriginal Offenders: Trends from 1978–2001. *Canadian Journal of Criminology and Criminal Justice*. 2003; 45(2):211–43.
17. Perreault S. The incarceration of Aboriginal people in adult correctional services. *Juristat: Canadian Centre for Justice Statistics*. 2009; 29(3):4–27.
18. Percival GL. Ideology, diversity, and imprisonment: Considering the Influence of Local Politics on Racial and Ethnic Minority Incarceration Rates. *Social Science Quarterly*. 2010; 91(4):1063–82.
19. Krieg A. Aboriginal Incarceration: Health and Social Impacts. *Medical Journal of Australia*. 2006; 184(10):534–6. [PubMed: 16719762]
20. Feldstein SW, Venner KL, May PA. American Indian/Alaska Native Alcohol-related incarceration and treatment. *American Indian & Alaska Native Mental Health Research. The Journal of the National Center*. 2006; 13(3):1–22.
21. Hess J. Addressing the overrepresentation of the Maori in New Zealand's criminal justice system at the sentencing stage: How Australia can provide a model for change. *Pacific Rim Law & Policy Journal*. 2011; 20(1):179–209.
22. Dauvergne, M. Adult correctional statistics in Canada, 2010/2011. Ottawa, ON: Minister of Industry; 2012.
23. Office of the Correctional Investigator. Aboriginal Offenders - A Critical Situation. Government of Canada; Ottawa, ON: 2013. <http://www.oci-bec.gc.ca/cnt/rpt/oth-aut/oth-aut20121022info-eng.aspx>
24. Omura JD, Wood E, Nguyen P, Kerr T, DeBeck K. Incarceration among street-involved youth in a Canadian study: Implications for health and policy interventions. *International Journal of Drug Policy*. 2014; 25(2):291–296. [PubMed: 24405564]
25. Wood, Stoltz J-A, Montaner J, Kerr T. Evaluating methamphetamine use and risks of injection initiation among street youth: the ARYS study. *Harm Reduction Journal*. 2006; 3(1):18. [PubMed: 16723029]
26. Liang K-Y, Zeger SL. Longitudinal data analysis using Generalized Linear Models. *Biometrika*. 1986; 73(1):13–22.
27. Zeger SL, Liang K-Y. Longitudinal data analysis for discrete and continuous outcomes. *Biometrics*. 1986; 42(1):121–30. [PubMed: 3719049]
28. Lipsitz SR, Molenberghs G, Fitzmaurice GM, Ibrahim J. GEE with Gaussian Estimation of the Correlations When Data Are Incomplete. *Biometrics*. 2000; 56(2):528–36. [PubMed: 10877313]
29. Maldonado G, Greenland S. Simulation Study of Confounder-Selection Strategies. *American Journal of Epidemiology*. 1993; 138(11):923–36. [PubMed: 8256780]
30. Marshall BDL, Kerr T, Shoveller JA, Patterson TL, Buxton JA, Wood E. Homelessness and unstable housing associated with an increased risk of HIV and STI transmission among street-involved youth. *Health & Place*. 2009; 15(3):783–90.

31. Milloy M-J, Kerr T, Buxton J, Montaner J, Wood E. Methamphetamine use and rates of incarceration among street-involved youth in a Canadian setting: a cross-sectional analysis. *Substance Abuse Treatment, Prevention, and Policy*. 2009; 4(1):17.
32. Lima V, Geller J, Bangsberg D, et al. The effect of adherence on the association between depressive symptoms and mortality among HIV-infected individuals first initiating HAART. *AIDS*. 2007; 21(9):1175–83. [PubMed: 17502728]
33. Lima VD, Kopec JA. Quantifying the effect of health status on health care utilization using a preference-based health measure. *Social Science & Medicine*. 2005; 60(3):515–24. [PubMed: 15550300]
34. Brzozowski J-A, Taylor-Butts A, Johnson S. Victimization and offending among the Aboriginal population in Canada. *Juristat: Canadian Centre for Justice Statistics*. 2006; 26(3):1–30.
35. Perreault S. Violent victimization of Aboriginal people in the Canadian provinces, 2009. *Juristat: Canadian Centre for Justice Statistics*. 2011:33.
36. Monchalin L. Canadian Aboriginal peoples victimization, offending and its prevention: Gathering the evidence. *Crime Prevention and Community Safety*. 2010; 12(2):119–32.10.1057/cpcs.2009.23
37. Perreault S. The incarceration of Aboriginal people in adult correctional services. *Juristat: Canadian Centre for Justice Statistics*. 2009; 29(3):A1, A4–A27.
38. Corrado RR, Kuehn S, Margaritescu I. Policy Issues Regarding the Overrepresentation of Incarcerated Aboriginal Young Offenders in a Canadian Context. *Youth Justice*. 2014; 14(1):40–62.
39. Gee GC, Ford CL. Structural racism and health inequities. *Du Bois Review: Social Science Research on Race*. 2011; 8(01):115–32. [PubMed: 25632292]
40. Chircop A. Public policy analysis to redress urban environmental health inequities. *Policy, Politics, & Nursing Practice*. 2011; 12(4):245–53.
41. Marmot M. Social determinants of health inequalities. *The Lancet*. 2005; 365(9464):1099–104.
42. Blagg H. Re-imagining youth justice: Cultural contestation in the Kimberley region of Australia since the 1991 Royal Commission into Aboriginal Deaths in Custody. *Theoretical Criminology*. 2012; 16(4):481–98.
43. Martel J, Brassard R. Painting the Prison ‘Red’: Constructing and Experiencing Aboriginal Identities in Prison. *British Journal of Social Work*. 2008; 38(2):340–61.
44. Bracken DC, Deane L, Morrissette L. Desistance and social marginalization: The case of Canadian Aboriginal offenders. *Theoretical Criminology*. 2009; 13(1):61–78.
45. Cunneen, C. *Conflict, politics and crime: Aboriginal communities and the police*. Sydney, Australia: Allen & Unwin; 2001.
46. Kirmayer, L.; Simpson, C.; Cargo, M. *Healing traditions: the mental health of Aboriginal peoples in Canada*. Vancouver, British Columbia: UBC Press; 2009.
47. Pan SW, Christian CWM, Pearce ME, et al. The Cedar Project: impacts of policing among young Aboriginal people who use injection and non-injection drugs in British Columbia, Canada. *International Journal of Drug Policy*. 2013; 24(5):449–59. [PubMed: 23731672]
48. Clark S. Aboriginal policing: a Canadian perspective. *Police Practice and Research*. 2013; 15(3): 261–2.
49. Rudin, J. *Aboriginal Peoples and the Criminal Justice System*. Toronto, ON: Government of Ontario; 2005.
50. Cunneen C. Changing the neo-colonial impacts of juvenile justice. *Current Issues in Criminal Justice*. 2008; 20(1):43–58.
51. Henggeler SW, Schoenwald SK. Social policy report: evidence-based interventions for juvenile offenders and juvenile justice policies that support them. *Sharing Child and Youth Development Knowledge*. 2011; 25(1):1–26.
52. Rohe WM, Adams RE, Arcury TA. Planner’s notebook: community policing and planning. *Journal of the American Planning Association*. 2001; 67(1):78–90.
53. Kirmayer L, Simpson C, Cargo M. Healing traditions: culture, community and mental health promotion with Canadian Aboriginal peoples. *Australas Psychiatr*. 2003; 11:15–23.

54. Alfred, GT. Wasáse: Indigenous Pathways of Action and Freedom. Ontario, Canada: Broadview Press Ltd; 2005.
55. Alfred, GT. Peace, power, righteousness: an indigenous manifesto. 2. New York, NY: Oxford University Press; 2009.

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- 378 of the 1050 (36%) street-involved youth in this study reported being incarcerated in the previous six months at some point during the study period
- Aboriginal ancestry remained significantly associated with incarceration, despite controlling for potential confounders such as sociodemographics, drug dealing and drug use practices
- These findings suggest that policing practices or other aspects of the current criminal justice system may be partly responsible

Table 1

Baseline sociodemographic characteristics and substance use behaviours associated with incarceration^a among street-involved youth in Vancouver, Canada (n = 1050).

Characteristic	Recent Incarceration ^a		Odds Ratio (95% CI ^b)	<i>p</i> -value
	Yes 378 (36%)	No 672 (64%)		
Aboriginal Ancestry				
Yes	108 (29)	140 (21)	1.52 (1.14 – 2.03)	0.005
No	270 (71)	532 (79)		
Age (Median, IQR^c)	22 (20 – 24)	21 (19 – 23)	1.07 (1.02 – 1.12)	0.013
Gender				
Male	301 (80)	417 (62)	2.39 (1.78 – 3.21)	<0.001
Female	77 (20)	255 (38)		
High School Incompletion				
Yes	308 (81)	484 (72)	1.67 (1.22 – 2.28)	0.001
No	69 (18)	181 (27)		
Lives in the DTES^{de}				
Yes	117 (31)	194 (29)	1.11 (0.84 – 1.45)	0.478
No	261 (69)	478 (71)		
Homeless^d				
Yes	285 (75)	478 (71)	1.25 (0.94 – 1.67)	0.129
No	91 (24)	191 (28)		
Foster Care Exposure				
Yes	199 (53)	295 (44)	1.42 (1.10 – 1.83)	0.007
No	174 (46)	366 (54)		
Heroin Use^d				
Yes	145 (38)	229 (34)	1.18 (0.91 – 1.54)	0.212
No	232 (61)	433 (64)		
Cocaine Use^d				
Yes	160 (42)	336 (50)	0.73 (0.57 – 0.94)	0.016
No	216 (57)	332 (49)		
Crystal Methamphetamine Use^d				
Yes	171 (45)	301 (45)	1.01 (0.78 – 1.30)	0.933
No	204 (54)	363 (54)		
Crack Cocaine Use^d				
Yes	240 (63)	363 (54)	1.47 (1.14 – 1.91)	0.003
No	137 (36)	305 (45)		
Any Injection Drug Use^d				
Yes	136 (36)	199 (30)	1.34 (1.02 – 1.75)	0.033
No	241 (64)	472 (70)		
Heavy Alcohol Use^d				

Characteristic	Recent Incarceration ^a		Odds Ratio (95% CI ^b)	<i>p</i> -value
	Yes 378 (36%)	No 672 (64%)		
Yes	143 (38)	246 (37)	1.05 (0.81 – 1.37)	0.694
No	235 (62)	426 (63)		
Binge Drug Use^d				
Yes	186 (49)	265 (39)	1.50 (1.16 – 1.94)	0.002
No	189 (50)	404 (60)		
Non-Fatal Overdose^d				
Yes	41 (11)	82 (12)	0.87 (0.59 – 1.30)	0.507
No	337 (89)	589 (88)		
Victim of Violence^d				
Yes	198 (52)	272 (40)	1.65 (1.28 – 2.13)	<0.001
No	175 (46)	397 (59)		
Sex Work^d				
Yes	35 (9)	72 (11)	0.85 (0.56 – 1.30)	0.454
No	343 (91)	600 (89)		
Drug Dealing^d				
Yes	203 (54)	316 (47)	1.31 (1.02 – 1.68)	0.038
No	175 (46)	356 (53)		
Sexual Abuse				
Yes	266 (70)	441 (66)	1.22 (0.93 – 1.62)	0.155
No	106 (28)	215 (32)		
Physical Abuse				
Yes	322 (85)	550 (82)	1.22 (0.85 – 1.75)	0.289
No	50 (13)	104 (15)		

Note: All column percentages may not sum to 100% due to missing data or rounding error.

^a Characteristics for individuals who were incarcerated in the last six months, measured at their first report (during the study period) of being incarcerated. Characteristics for all other participants were measured from the first study visit during the study period;

^b CI = Confidence Interval;

^c IQR = Interquartile Range;

^d Denotes activities in the last six months;

^e DTES = downtown eastside, the epicenter of Vancouver's drug scene

Table 2

Bivariate and multivariate GEE analyses of factors associated with incarceration and Aboriginal ancestry, controlling for confounding variables (n=1050).

Characteristic	Unadjusted Odds Ratio		Adjusted Odds Ratio	
	OR ^a (95% CI ^b)	p-value	AOR ^c (95% CI ^b)	p-value
Aboriginal Ancestry	1.27 (1.00 – 1.62)	0.054	1.40 (1.09 – 1.80)	0.008
Age (Per Year Older)	1.06 (1.01 – 1.10)	0.017		
Male Gender	2.42 (1.84 – 3.20)	<0.001	2.31 (1.74 – 3.07)	<0.001
High School Incompletion	1.53 (1.16 – 2.01)	0.003	1.43 (1.08 – 1.89)	0.013
Lives in the DTES ^{de}	1.19 (0.97 – 1.47)	0.089		
Homeless ^d	2.11 (1.75 – 2.54)	<0.001	1.85 (1.52 – 2.26)	<0.001
Foster Care Exposure	1.20 (0.96 – 1.50)	0.117		
Heroin Use ^d	1.58 (1.29 – 1.94)	<0.001	1.42 (1.15 – 1.76)	0.001
Cocaine Use ^d	1.20 (1.00 – 1.43)	0.052		
Crystal Methamphetamine Use ^d	1.35 (1.13 – 1.62)	0.001		
Crack Cocaine Use ^d	1.59 (1.34 – 1.88)	<0.001	1.12 (0.93 – 1.35)	0.218
Any Injection Drug Use ^d	1.50 (1.22 – 1.83)	<0.001		
Heavy Alcohol Use ^d	1.13 (0.94 – 1.35)	0.203		
Binge Drug Use ^d	1.60 (1.35 – 1.91)	<0.001		
Non-Fatal Overdose ^d	1.25 (0.95 – 1.64)	0.108		
Victim of Violence ^d	1.88 (1.57 – 2.24)	<0.001		
Sex Work ^d	1.07 (0.78 – 1.47)	0.679		
Drug Dealing ^d	2.10 (1.75 – 2.53)	<0.001	1.74 (1.43 – 2.12)	<0.001
Sexual Abuse	1.18 (0.93 – 1.52)	0.179		
Physical Abuse	1.04 (0.75 – 1.44)	0.817		

^a OR = Odds Ratio;

^b CI = Confidence Interval;

^c AOR = Adjusted Odds Ratio;

^d Refers to activities in the previous six months;

^e DTES = downtown eastside, the epicenter of Vancouver's drug scene